REMARKS

Applicant would like to thank the Examiner for the careful consideration given the present application. The application has been carefully reviewed in light of the Office action, and amended as necessary to more clearly and particularly describe the subject matter which applicant regards as the invention.

Attached hereto is a marked-up version of the changes made to the application by the present Amendment.

Claims 6-10 have been cancelled, thereby removing the Examiner's grounds for objection under 37 CFR 1.75. Further, remaining claims 1-5 and 11 have been amended to remove the Examiner's grounds for rejection under 35 U.S.C. 112. Reconsideration of the application in its current form is requested.

Claim 11 stand rejected under 35 U.S.C. 102(e) as being anticipated by US 6,445,148 to Huang et al. It is noted that the Huang patent issued on September 3, 2002 from a US application filed on December 8, 2000. Insofar as the present application is based upon Japanese application 2000/300303 filed September 29, 2000, the Huang patent may be removed as a reference if the applicant perfects the claim for priority. Accordingly, enclosed herewith is a certified translation of the priority document (JP 2000/300303). It is submitted that the priority document provides complete support for the invention defined in claim 11, and that the Huang patent is, therefore, not a reference against the present application.

Further, it is noted that Huang teaches a method to control two fan motors. When one of the two motors is in an abnormal condition, an abnormal signal is outputted and then the other motor increases its speed in response to this abnormal signal. Such control is intended to make up for the damaged motor with the other normal motor. Huang et al., however, does not teach the features of claim 11,

wherein, when at least one of a plurality of fan motors stops, all of the remaining motors are set to rotate the maximum speed. Accordingly, for at least the foregoing reasons, claim 11 is allowable.

Claims 1-10 stand rejected as being unpatentable over US 6,211,635 to Kambe et al. in view of US 6,256,181 to Chinomi et al. The Examiner's rejections are traversed for the following reasons.

In the present invention, it is considered as a severely abnormal condition that even one of the plurality of fan motors stops. In this case, all of the remaining normal fan motors are fully utilized in cooling an electronic component or device. Thus, it is possible to positively avoid the worst event - that the electronic component or device to be cooled is caused to stop due to the abnormal fan motor.

Kambe et al. shows a method to solve problems with an outdoor fan motor of an air conditioner that arises in starting the motor, which is already rotating by means of natural wind. In Kambe, the fan motor is started with ON-OFF control using a specified conduction pattern, by synchronizing the switching elements of the inverter circuit with the output signal from the Hall probe, which detects the rotational position of the rotor rotating by means of natural wind. Specifically, before starting the motor, the control means controls the switching elements to supply DC PWM-controlled current to the stator coils of the motor in synchronization with the output signal of the Hall probe, so that the rotor is braked, stopped, and set to the home position.

Therefore, Kambe does not shown any configuration of a power control circuit as defined in claim 1 of the present application. The Examiner has recognized this deficiency of the Kambe reference, and has instead relied upon Chinomi et al. as teaching this structure.

However, Chinomi et al. also shows a method to solve problems with an

outdoor fan motor that arise in starting a motor that is already rotating by means of natural wind. Chinomi discloses a device in which the drive circuit prohibits driving of the fan motor when the motor speed is detected to exceed a specific threshold value before the motor is started. Chinomi shows a method to determine whether or not the motor should be started based upon the detected rotational speed of the rotor at the startup time.

Therefore, Chinomi does not show any configuration of a power control circuit as defined in claim 1 of the application. For example, Chinomi does not teach or suggest a

> a power control circuit for outputting a control signal *which acts to control the on/off operation of said power feed semiconductor switch*, thereby controlling the rotational speed of said rotor;
>
> said power control circuit *controlling the on/off operation of said power feed semiconductor switch* based on a value of the target rotational speed of said rotor given as a speed command and an actual rotational speed obtained by said rotational speed detecting means;
>
> said power control circuit being constructed so that *after the rotational speed of said rotor is stabilized, said power feed semiconductor switch may have turn-off time set shorter when an actual rotational speed is slower, in comparison, than said target rotational speed, and set longer when the actual rotational speed is faster than said target rotational speed, and set as it is when an actual rotational speed is substantially equal to said target rotational speed.* (emphasis added)

Rather, the Chinomi reference merely teaches a device and method to assist in start up when the rotor is already rotating due to environmental influences. More specifically, Chinomi teaches a circuit that will prevent driving of the motor when the rotor is already rotating. This is unrelated to the presently claimed invention, which is concerned with controlling the speed of the rotor during operation (compared to a sensed speed) without the use of PWM control (see Background of application). This type of control is contrary to that of the cited Chinomi-and Kambe references, wherein PWM control is employed. Moreover, it is respectfully submitted that the

portion of Chinomi (Col. 2, lines 37-67) relied upon by the Examiner for teaching the "power control circuit" does not teach that for which it is cited. This cited portion of Chinomi has been read several times, and cannot be interpreted as teaching a "power feed semiconductor switch may have turn-off time set shorter when the rotational speed is slower and the target rotational speed is set longer when the actual rotational speed is faster than the rotational target speed". For at least the foregoing reasons, it is respectfully submitted that claim 1 is not obvious in light of the Examiner's proposed combination of references. Claims 2-5 introduce further novel and non-obvious features of the present invention, and are likewise allowable over the art of record.

In light of the foregoing, it is respectfully submitted that the present application is in a condition for allowance and notice to that effect is hereby requested. If it is determined that the application is not in a condition for allowance, the Examiner is invited to initiate a telephone interview with the undersigned attorney to expedite prosecution of the present application.

If there are any additional fees resulting from this communication, please charge same to our Deposit Account No. 18-0160, our Order No. NIS-12689.

Respectfully submitted,

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Attachment: Marked-up version of Amendments

IN THE CLAIMS:

The claims have been amended as follows:

1. (Amended) A drive unit for a brushless fan motor including a stator provided thereon with a plurality of excitation windings and a rotor including a plurality of rotor magnetic poles each constituted by a permanent magnet, comprising:

a position detector for detecting a position of said rotor of the brushless fan motor;

a rotational speed detecting means for detecting a rotational speed of said rotor;

a plurality of excitation changing over semiconductor switches each connected in series to each of said excitation windings so as to permit an excitation current to flow therethrough to each of said excitation windings when they are turned on;

a drive circuit for outputting an on/off change-over signal for said excitation changing over semiconductor switches depending on an output of said position detector;

a power feed semiconductor switch arranged between said excitation windings and a power supply so as to permit power to be fed from said power supply therethrough to said excitation windings when it is turned on; and

a power control circuit for outputting a control signal which acts to control the on/off operation of said power feed semiconductor switch, thereby controlling the rotational speed of said rotor;

said power control circuit controlling the on/off operation of said power feed

semiconductor switch based on ~~[the]~~ a value of the target rotational speed of said rotor given as a speed command and ~~[the]~~ an actual rotational speed obtained by said rotational speed detecting means;

said power control circuit being constructed so that after the rotational speed of said rotor is stabilized, said power feed semiconductor switch may have turn-off time set shorter when an actual rotational speed is slower, in comparison, than said target rotational speed, and set longer when ~~[an]~~ the actual rotational speed is faster than said target rotational speed, and set as it is when an actual rotational speed is substantially equal to said target rotational speed.

2. (Amended) ~~[A]~~ The drive unit for a brushless fan motor as defined in claim 1, wherein said hall device for detecting the magnetic flux of said plural permanent magnets is provided on the side of said stator;

said position detector detects position and said rotational speed detecting means ~~[detect position and]~~ detects rotational speed of said rotor based on the output of said hall device.

3. (Amended) ~~[A]~~ The drive unit for a brushless fan motor as defined in claim 1, wherein, until the rotational speed of said rotor is stabilized, said turn-off time and said turn-on time of said power feed semiconductor switch is set at a predetermined value.

4. (Amended) ~~[A]~~ The drive unit for the brushless fan motor as defined in claim 1, wherein said power control circuit ~~[normally]~~ sets said target rotational speed at a normal rotational speed which is slower than a maximum rotational speed

when said speed command is entered, and [set] sets said turn-off time at zero (0) so as to rotate said rotor at said maximum speed, when said speed command is not entered while power is fed from said power supply.

5. (Amended) [A] The drive unit for a brushless fan motor as defined in claim 1, wherein said power feed semiconductor switch is turned off or an alarm is given when the rotational speed of said rotor does not reach or surpass a predetermined rotational speed, after said speed command is entered.

11. (Amended) A method to control a plurality of brushless fan motors, wherein the [plural] plurality of fan motors are set to rotate at a normal rotational speed which is slower than a maximum speed of [respective] each of the fan [motor] motors, and [the remaining fan motors are set to rotate at the respective maximum speed,] when at least one [or more] of said brushless fan motors [are holted] is stopped, remaining ones of said plurality of brushless fan motors are set to rotate at the maximum speed.